UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/631,814	08/01/2003	Yasuo Harada	116748	2021

25944 7590 05/20/2005

OLIFF & BERRIDGE, PLC
P.O. BOX 19928
ALEXANDRIA, VA 22320

EXAMINER	
CASTRO, ARNOLD	
ART UNIT	**PAPER NUMBER**
3747	

DATE MAILED: 05/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/631,814	HARADA ET AL.
	Examiner	Art Unit
	Arnold Castro	3747

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-44* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10,13-32 and 34-44* is/are rejected.

7)☒ Claim(s) *11,12 and 33* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *08/01/2003*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Species 1, Figures 1-21 in the reply filed on 25 February 2005 is acknowledged. The traversal is on the grounds that the subject matter of all species is sufficiently related, that a search and examination would not result in serious burden. This argument was found persuasive and the Election of Species Requirement has been withdrawn.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 27 and 29 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. Claims 27 and 29 recites the limitation "evaluating means " in second line of claims. There is insufficient antecedent basis for this limitation in the claims.

5. Claim* 28 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is indefinite how output values cannot have overall target values.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-10, 13-32, and 34-44 are rejected under 35 U.S.C. 102(b) as being anticipated by Nakayama Shigeki et al. (JP 2002-13889).

8. Shigeki et al. discloses an automatic conformity device comprising: compliant operating state determining means for determining a plurality of operating states for establishing compliance; parameter initial value determining means for determining initial values of a plurality of parameters for control of the engine operation for each operating state for establishment of compliance; compliance target value determining means for determining compliance target values for the plurality of output values; and parameter complying means for determining adjustment sequences and adjustment directions of a plurality of parameters for reducing output values exceeding compliance target values and sequentially adjusting these parameters in accordance with the determined adjustment sequences in the determined adjustment directions. Overall document.

Appropriate paragraph from computer translation of Nakayama Shigeki et al. (JP 2002-13889). Containing the limitation claimed is noted after each dependent claim.

2. An automatic compliance device as set forth in claim 1, wherein vehicle

specifications, engine specifications, and other information required for establishment of compliance are input when determining the operating states for establishing compliance. Paragraph 0014

3. An automatic compliance device as set forth in claim 1, wherein values of parameters suitable for the remaining operations are found based on complying parameters for at least one of a steady operation or transient operation in an engine or a steady operation or transient operation in a vehicle. Paragraph 0020

4. An automatic compliance device as set forth in claim 1, wherein the operating states for establishing compliance are set as points on a map as functions of the torque and engine speed and wherein said compliant operating state determining means determines the intervals of the points on the map and the ranges of the torque and engine speed for establishing compliance. Paragraph 0020

5. An automatic compliance device as set forth in claim 1, wherein where the operating states for establishing compliance are set as points on a map as functions of the torque and engine speed and where said compliant operating state determining means determines the ranges of the torque and engine speed for establishing compliance based on the torque and engine speed used in a test mode for evaluation of emission. Paragraph 0021

6. An automatic compliance device as set forth in claim 1, wherein said parameters for establishment of compliance are all or part of a main injection timing, pilot injection timing, amount of pilot injection, common rail pressure, opening degree of exhaust gas recirculation control valve, opening degree of intake throttle valve, and opening degree of variable nozzle of turbocharger. Paragraph 0031-35, 0038

7. An automatic compliance device as set forth in claim 6, wherein mean values of compliance of parameters of existing engines having specifications corresponding to the specifications of the engine for establishment of compliance are stored in advance and wherein the parameter initial value determining means uses the mean values of compliance as initial values of the parameters.

8. An automatic compliance device as set forth in claim 1, wherein the output values are all or part of the emission, combustion noise, and fuel consumption and the emission is all or part of an amount of NOx in exhaust gas, concentration of smoke or amount of particulate, amount of hydrocarbons, and amount of CO. Paragraph 0049, 0066,

9. An automatic compliance device as set forth in claim 8, wherein compliance

targets of the amount of NOx, amount of particulate, amount of hydrocarbons, and amount of CO in the output values are overall targets which is equal to cumulative values when running in a test mode for evaluation of emission and where the compliance targets of the remaining output values are target values in each operating state for establishment of compliance. Paragraph 0049, 0066

10. An automatic compliance device as set forth in claim 9, wherein compliance targets of output targets in each operation state are determined for output values having overall targets so that the cumulative values of the output values when running in the test mode become less than predetermined development targets. Paragraph 0049, 0066

13. An automatic compliance device as set forth in claim 1, wherein said parameter complying means sequentially adjusts the engine in each operating state using initial values of parameters determined by the parameter initial value determining means and wherein the adjustment sequences and adjustment directions of a plurality of parameters for reduction of the exceeding output values are determined when there are output values exceeding the compliance target values at that time. Paragraph 0073

14. An automatic compliance device as set forth in claim 13, wherein the compliance values of existing engines having specifications corresponding to

specifications of an engine for establishment of compliance are stored in advance and wherein the ranges of search of the parameters for compliance are made the ranges of standard deviation about mean values of compliance of existing engines. Paragraph 0091

15. An automatic compliance device as set forth in claim 14, wherein the ranges of search of parameters are corrected in accordance with the extents by which the output values exceed the compliance target values when operating in each operating state using the initial values of the parameters and the ranges of search of the parameters are made narrower the smaller the extent of excess. Paragraph 0093

16. An automatic compliance device as set forth in claim 13, wherein the relationships between the output values and the adjustment sequences and adjustment directions of the parameters to be adjusted when the output values exceed the compliance target values are stored in advance and wherein the adjustment sequences and adjustment directions of the parameters are determined based on these relationships when output values exceed the compliance target values. Paragraph 0092-94

17. An automatic compliance device as set forth in claim 13, wherein the relationships between the plurality of output values and the adjustment

sequences and adjustment directions of the parameters to be adjusted when the plurality of output values exceed the compliance target values are stored in advance and wherein the adjustment sequences and adjustment directions are determined based on the relationships in accordance with the deterioration of these output values. Paragraph 0092-94

18. An automatic compliance device as set forth in claim 13, wherein the relationships between the output values and the adjustment sequences and adjustment directions of the parameters to be adjusted when the output values exceed the compliance target values are stored in advance, it is judged that output values are in a tradeoff for a common parameter to be adjusted when a plurality of output values exceed the compliance target values, and the parameters to be adjusted and the adjustment sequences and adjustment directions of the parameters are determined based on that judgment. Paragraph 0092-94

19. An automatic compliance device as set forth in claim 18, wherein when a plurality of output values exceed the compliance target values, the output values of the top two extents of deterioration are extracted from these output values and it is judged whether or not these two output values are in a tradeoff. Paragraph 0095-97

20. An automatic compliance device as set forth in claim 18, wherein when output values are in a tradeoff with respect to a common parameter, the parameter is not adjusted and the other parameters differing in adjustment sequence are adjusted in order from the parameter with the earlier adjustment sequence and other parameters with the same adjustment sequence are adjusted in order from the parameters for output values with high degrees of deterioration. Paragraph 0099

21. An automatic compliance device as set forth in claim 18, wherein when output values are not in a tradeoff with respect to a common parameter, parameters differing in adjustment sequence are operated in order from the parameters with the earlier adjustment sequence and parameters with the same adjustment sequence are operated in order from the parameters for output values with high degrees of deterioration. Paragraph 0099

22. An automatic compliance device as set forth in claim 1, wherein evaluating means is provided for evaluating change in output values when a parameter is operated and wherein said parameter complying means performs a compliance operation of a parameter in accordance with the evaluation by the evaluating means. Paragraph 0097

23. An automatic compliance device as set forth in claim 22, wherein said

evaluating means evaluates changes of output values using an evaluation function expressing a ratio of the output values with respect to the compliance target values. Paragraph 0099

24. An automatic compliance device as set forth in claim 22, wherein said parameter complying means continues to adjust the same parameter when it is evaluated that the output values when adjusting parameters are declining in trend. Paragraph 0100

25. An automatic compliance device as set forth in claim 24, wherein said evaluating means evaluates changes in output values using an evaluation function showing the ratio of output values with respect to compliance target values and wherein said parameter complying means continues to adjust the same parameter when the amount of reduction of the evaluation function is more than a predetermined prescribed value when a parameter is adjusted. Paragraph 0100

26. An automatic compliance device as set forth in claim 13, wherein said parameter complying means changes the parameter to be adjusted to the next parameter in accordance with an adjustment sequence of the parameters when it is evaluated that the output values have not changed much at all or when the output values rise in trend when a parameter is adjusted. Paragraph 0101

27. An automatic compliance device as set forth in claim 26, wherein said evaluating means evaluates changes in output values using an evaluation function showing the ratio of output values with respect to compliance target values and wherein said parameter complying means changes the parameter to be adjusted to the next parameter in accordance with an adjustment sequence of the parameters when the amount of reduction of the evaluation function is at least a predetermined prescribed value when a parameter is adjusted or when the value of the evaluation function rises. Paragraph 0101

28 and 29. An automatic compliance device as set forth in claim 13, wherein said evaluating means evaluates changes in output values using an evaluation function showing the ratio of output values to compliance target values, learns the amount of reduction of the evaluation function when adjusting a parameter, and changes the adjustment sequence of the parameters to an order of the magnitude of the amount of reduction of the evaluation function. Paragraph 0113

30. An automatic compliance device as set forth in claim 13, wherein when it is judged that the compliance operation has been completed for one operating state, the device shifts to the compliance operation for the next operating state. Paragraph 0101

31. An automatic compliance device as set forth in claim 1, wherein when the compliance operations for all operating states have been completed, cumulative values of output values when running in a test mode are calculated for output values having overall target values and wherein recomplying means is provided for performing a recompliance operation when the cumulative values calculated exceed development target values or when there is leeway with respect to development target values. Paragraph 0104

32. An automatic compliance device as set forth in claim 31, wherein said recomplying means extracts operating states satisfying all compliance target values from the operating states for establishment of compliance and lowers the compliance target values of the output values not satisfying the overall target values among the overall target values in the operating states satisfying all compliance target values. Paragraph 0104

34. An automatic compliance device as set forth in claim 31, wherein when the cumulative values of output values having overall target values are lower than the overall target values by at least a certain setting, the compliance target values in each operating state of the output values are increased, the operating states where the compliance target values are not satisfied are extracted for outputs other than those output values, and the compliance target values in those operating states are made lower. Paragraph 0104

35. An automatic compliance device as set forth in claim 1, wherein the output values are all or part of the emission, combustion noise, and fuel consumption, the emission is all or part of the amount of NOx in the exhaust gas, the concentration of smoke or amount of particulate, amount of hydrocarbons, and amount of CO, the compliance target value of the amount of NOx is an overall target value which is equal to a cumulative value when running in a test mode for evaluation of the emission, the cumulative value of the amount of NOx when running in the test mode is calculated, and processing is performed for improvement of the fuel consumption when there is leeway in the cumulative value of the amount of NOx calculated with respect to the overall target value. Paragraph 0077-0078

36. An automatic compliance device as set forth in claim 35, wherein a compliance target value for NOx is set for each operating state for improvement of fuel consumption and the processing for improvement of the fuel consumption is comprised of processing for increasing the compliance target value of NOx and advancing the fuel injection timing in each operating state for improvement of fuel consumption. Paragraph 0077-0078

37. An automatic compliance device as set forth in claim 36, wherein it is judged whether each output value satisfies the compliance target value each

time processing for improvement of the fuel consumption is performed and processing for improvement of fuel consumption is executed so long as each output value satisfies the compliance target value. Paragraph 0077

38. An automatic compliance device as set forth in claim 36, wherein it is judged whether the fuel consumption has been improved each time processing for improvement of fuel consumption is performed and when it is judged at least a predetermined number of times that the fuel consumption has not been improved much at all, the processing for improvement of fuel consumption is stopped. Paragraph 0083

39. An automatic compliance method comprising the steps of: determining a plurality of operating states for establishing compliance; determining initial values of a plurality of parameters for control of engine operation for individual operating states for establishing compliance; determining compliance target values for the plurality of output values; determining adjustment sequences and adjustment directions of a plurality of parameters for reducing output values exceeding compliance target values; and sequentially adjusting these parameters in accordance with the determined adjustment sequences in the determined adjustment directions. Overall document

40. An automobile enabling onboard establishment of compliance provided with

an automatic compliance device provided with compliant operating state determining means for determining a plurality of operating states for establishing compliance, parameter initial value determining means for determining initial values of a plurality of parameters for control of the engine operation for each operating state for establishment of compliance, compliance target value determining means for determining compliance target values for the plurality of output values, and parameter complying means for determining adjustment sequences and adjustment directions of a plurality of parameters for reducing output values exceeding compliance target values and sequentially adjusting these parameters in accordance with the determined adjustment sequences in the determined adjustment directions. Overall document

41. An automobile as set forth in claim 40, wherein said automatic compliance device is provided with a vehicle model for outputting output values of a vehicle when receiving as input parameters and wherein said parameters are adjusted based on the output values of said vehicle model. Paragraph 0084

42. An automobile as set forth in claim 40, wherein actual output values of the vehicle are measured and wherein said vehicle model is corrected based on the measured output values. Paragraph 0035

43. An automobile as set forth in claim 40, wherein said vehicle model is

stored in an exchangeable storage medium. Paragraph 0036

44. A storage medium for storing in a computer a program for realizing an automatic compliance device as set forth in any one of claims 1 to 38. Paragraph 0036

Allowable Subject Matter

9. Claims 11, 12 and 33 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arnold Castro whose telephone number is (571) 272-4839. The examiner can normally be reached on Mon, Tues, Wed, Thurs 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yuen Henry can be reached on (571)-272-4856. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Arnold Castro
Examiner
Art Unit 3747

AC

Henry C. Yuen
Supervisory Patent Examiner
Group 3700